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THESIS

THE RELATION OF NAVAL OFFICER PROMOTION TO COMMISSION SOURCE AND BILLET HISTORY

by

George R. Parish, III

June 1979

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for organizational and individual career planning are discussed and recommendations made.

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THE RELATION OF NAVAL OFFICER PROMOTION TO COMMISSION SOURCE AND BILLET HISTORY

by

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Lieutenant, United States Navy
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requirements for the degree of

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Career paths and commission source are examined for a sample of Naval officers from year groups 1958, 1959, and 1960 to determine their relationship to promotion to commander. Contingency tables and multiple regressions were used to assess the relationships. Significant effects were found for source and for billets as far back as the third billet prior to entering the zone of consideration. The implications of the findings for organizational and individual career planning are discussed and recommendations made.

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I. INTRODUCTION

As an organization that must manage a closed personnel system, the Navy has elaborate career plans for the development of the officer corps. In practice, any individual career can be defined as the sequence of positions held by that individual in the organization, and specific careers may differ greatly among themselves and from the ideal path envisaged by the organization. The force structure and policies for moving individuals through that structure may not be compatible with the career plan. Since there are frequent fluctuations of considerable magnitude in the authorized strengths of the military, career patterns may be seriously affected by growth or retrenchment in the opportunities. Finally, since the hierarchical structure of the U.S. military forces requires that individuals be promoted or released from service (the "up-or-out" policy), all career paths may not have the same utility with respect to promotion and the continuation of service. If this is the case, the dynamics of the situation will create many recognizably different career paths with different survival rates for individuals on those paths. Thus, force planning, policy formulation, and career management must be keenly aware of the realities of this situation to be effective and to attain their respective goals.

This study examines the career paths of a limited segment of the Navy officer corps at a particular period in the careers of these officers to determine the relative frequency with which the more common paths occur and the consequences they

engender. The source program for these officers is also examined as a possible moderator in the determination of the career path and promotion and continuation of service.

II. SURVEY OF RELATED LITERATURE

A review of recent literature reveals two important findings related to this study. First, upward mobility appears to be related to factors external to job performance. For example, Perry and Selgelid (1976) found in a study of U.S. Navy Supply Corps officers that certain duty assignments related to promotion to the grades of lieutenant commander, commander, and captain. Anderson and Cooper (1976) related promotion success of naval officers to various psychological variables and showed that promotion could be predicted from such data. Finally, Brochu (1978) found that the number of criteria used to determine promotion for a naval officer increases as the officer progresses up the organizational ladder.

The second finding is that individuals perceive a relationship to exist between upward mobility and factors external to job performance, and they act accordingly. MacCrimmon and Vroom (1968) found in a study of civilian managers that the career-development process impacts on a manager's expectations about future mobility, and vice versa. Nededog (1975) found that lack of career-enhancing billets and poor management of career patterns were perceived by passed-over lieutenants to be prime contributors to their promotion failure to the grade of lieutenant commander. Finally, Robertson and Pass (1979) found that junior surface warfare officers place a high degree of emphasis on duty assignments that are perceived to be career-enhancing.

III. METHODOLOGY

A. APPROACH

The general approach to this study was to trace the billet paths of individual surface warfare officers back from the point in time when they came into the zone of consideration for promotion to the grade of commander (CDR) and to observe promotional outcomes. Specifically, this point in time was determined and billets were traced back in time, with the billet in which the officer was serving at the time he entered the zone being designated as "Historical Billet-1," the billet prior to historical billet-1 being designated as "Historical Billet-2," etc. This study examined billets back to and including historical billet-4. A deeper time-slice of the officers' careers was not taken for analysis because the data available for billets prior to historical billet-4 were too thin for meaningful analyses.

1. Cohorts for Analysis

The analyses conducted for this study pivoted on cohorts of officers (specifically, year groups 1958, 1959, and 1960). This was necessary to simplify determination of zone eligibility dates for a large number of officers who were serving concurrently (in time). The three cohorts were also needed to ensure a sufficiently large sample and to dampen any unique events to which any one cohort may have been subject. The cohort file for this study was provided by the Navy Manpower and Personnel Center. This file contained standard label data on officers

from the Master Officer File (Active Duty) and the Attrition File.

2. Billet Classification

The scheme developed for classifying billets had to be meaningful and, at the same time, provide for a small enough number of billet categories to permit analysis and to develop generalizable results. That is, all possible billets in which surface warfare officers could serve had to be condensed to just a few. A moderate number of billet categories were used initially as a screening device. Then billets were combined as observation of their individual frequency distributions revealed many to be too small for analysis as separate billets. In chaining billets in time, the number of billet categories had to be kept particularly small, initially, to preclude a massive proliferation of paths as billets were added subsequent to historical billet-1 because the number of paths increases exponentially with each billet that is added.

3. Promotion Outcomes

Promotion outcomes were categorized by the rate of promotion as well as the simple outcome of promoted or not promoted. Officers with precedence numbers in the top 20% of their year group were classified as being promoted early for analysis, officers with precedence numbers in the middle 60% of their year group were considered to have achieved a normal promotion rate, and all officers with precedence numbers in the bottom 20% of their year group were considered to have been promoted late for analytic purposes. The not promoted category

was assigned to all officers who were passed over for the grade of CDR and remained on active duty and to all officers who were passed over for the grade of CDR and attrited from active duty. Another possible outcome was initially considered, but later deleted from the analyses because of the severe differences in billet histories. This outcome was for all officers who had attrited prior to entering the zone of eligibility for promotion to the grade of CDR. There were 100 officers in this category.

4. Sources of Commissioning

The different possible sources from which the officers had obtained their original commission were combined into four categories. The first three categories represented the three major officer accession programs: USNA, NROTC(S), and OCS. The fourth category represented the aggregate of all other commission sources and was designated as "OTHER". This consolidation of sources was necessary to again hold down the proliferation of cells in the analysis of frequency distributions.

5. Rate of Promotion

In order to observe how rapidly any one officer was promoted to the grade of CDR (assuming that he was promoted), the officer's precedence number was used as a proxy measure of promotion success among those that were promoted to CDR. This number was needed because date of rank for the officers promoted to CDR did not provide sufficient distinctions among the officers, especially among those with identical dates of rank.

B. SUBJECTS

The subjects for this study were all male Surface Warfare Officers who attained the rank of Lieutenant Commander, and whose year groups were either 1958, 1959, or 1960. Table 1 provides data on the distribution of the subjects by year group, source, and promotion outcome. Table 2 shows promotion and promotion eligibility dates for the three year groups.

C. BILLET CATEGORIES

Billet categories were defined along three dimensions: location, function, and subspecialty utilization.

Location of a billet described whether the billet was at sea or ashore. A specific billet was classified "SEA" or "SHORE" according to the value of the station code, which was appended to the Navy Officer Billet Classification Code (NOBC) for each billet. Table 3 shows the duty stations for which billets were classified as "sea". All other duty stations were classified as "shore".

Function of the billet described the general nature of the job itself in terms of what duties the incumbent was assigned. The functions used in this study were: command, executive, staff, student, and other. "Command" included commanding officer (CO), officer-in-charge (OIC), commander of operating forces command, military department officer, and area commander. "Executive" included executive officer (XO), chief of staff (COS), chief staff officer (CSO), and executive assistant (EA). "Staff" included flag aide, flag lieutenant, flag secretary, and all other billets identified by the word "staff." "Student"

TABLE 1

DISTRIBUTION OF SUBJECTS BY YEAR GROUP, SOURCE, AND PROMOTION OUTCOME

YEAR GROUP	SOURCE	# PROMOTED	# PASSED OVER	TOTAL
1958	USNA	61	27	88
	NROTC(S)	25	15	40
	OCS	62	23	85
	OTHER	54	56	110
1951	USNA	57	22	79
	NROTC(S)	24	10	34
	OCS	57	36	93
	OTHER	41	23	64
1960	USNA	67	23	90
	NROTC(S)	32	7	39
	OCS	77	37	114
	OTHER	65	36	101
ALL	USNA	185	72	257
	NROTC(S)	81	32	113
	OCS	196	96	292
	OTHER	160	115	275

TABLE 2

PROMOTION AND PROMOTION ELIGIBILITY
DATES BY YEAR GROUP

YEAR GROUP	PROMOTION ELIGIBILITY DATES	PROMOTION DATES
1958	OCT 71 - OCT 72	DEC 71 - JUL 73
1959	OCT 72 - OCT 74	AUG 73 - FEB 75
1960	OCT 74 - OCT 75	JAN 75 - JAN 76

TABLE 3

DUTY STATIONS CLASSIFIED
AS "SEA"

AFLOAT STAFFS

08D, G,J,L,P,S,U,V,W,Y, 71B,C

SHIPS AND OTHER WATER-BORNE CRAFT

10A-Z, 12A-Z, 16A, 16Z, 17A-Z, 19A-Z, 20A-Z, 21A-Z,
22A-Z, 23A-Z, 24A-Z, 27A-Z, 28A, 28Z, 29A-Z, 30A-Z,
31A, 31Z, 32A-Z, 33A-Z, 34A, 34Z, 35A-Z, 36A, 36Z,
37A-Z, 38A-Z, 39A-Z, 40A-Z, 41A-H, 41L, 41Z, 42A,
42Z, 43A-Z, 44A-Z, 45A-Z, 46A-Z, 47A-Z, 48A-Z, 49A-Z,
50A-Z, 51A-D, 51F-Z, 52A, 52Z, 53A-Z

Note: The above station codes are listed in the U.S. Bureau of Naval Personnel Manual of Navy Officer Manpower and Personnel Classifications.

included student officer. "Other" included all other billets not elsewhere defined. Table 4 provides a list of billet codes applicable to each functional billet, by location.

Subspecialty utilization defined whether an officer has obtained a subspecialty, and if so, if that subspecialty was used (or not used) in the billet to which the officer was assigned. An officer either had no subspecialty, had a subspecialty that was used, or had a subspecialty that was not used.

D. HISTORICAL BILLET IDENTIFICATION

Identification of historical billets was accomplished by starting with an officer's present billet and subtracting the number of months spent in each of the prior billets until arriving at the billet to which the officer was assigned at the time he entered the zone of eligibility for selection to the grade of CDR. This billet was designated "Historical Billet-1." The three billets immediately preceding this billet (progressing back in time) were designated "Historical Billet-2," "Historical Billet-3," and "Historical Billet-4." Figure 1 illustrates the chronological distributions of historical billets by year group.

TABLE 4

NAVY OFFICER BILLET CODES ASSIGNED
TO BILLET CATEGORIES

FUNCTION	SEA	SHORE
COMMAND	9005, 9006, 9222, 9223, 9234, 9266, 9273, 9279	9005, 9009, 9420, 9421, 9470
EXECUTIVE	9015, 9016, 9228	9015, 9016, 9436, 9471, 9930
STAFF	2360, 2365, 3985, 5996, 6999, 7187, 7285, 8685, 8687, 8730, 8972, 8995, 9019, 9021, 9034, 9035, 9040, 9042, 9044, 9045, 9046, 9053, 9059, 9060, 9062, 9063, 9064, 9065, 9067, 9068, 9069, 9070, 9071, 9072, 9073, 9074, 9075, 9076, 9077, 9078, 9079, 9080, 9082, 9084, 9087	Same as for SEA
STUDENT	Not Applicable	3289
OTHER	See Text	See Text

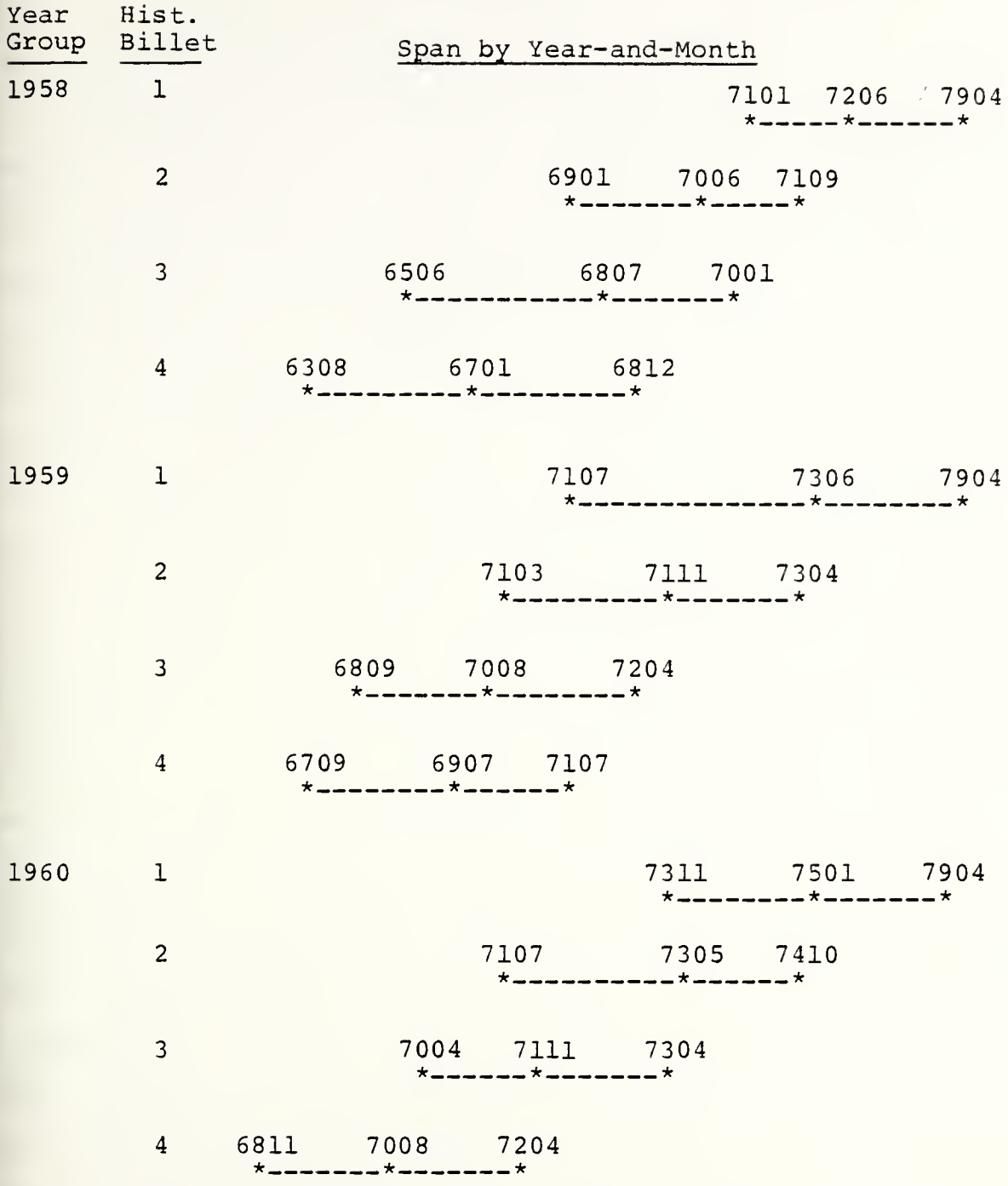

Figure 1 Historical Billet Chronological Distributions by Year Group. The left-hand asterisk indicates the earliest date (by year and month), the right-hand asterisk indicates the latest date (by year and month), and the center asterisk indicates the mean date (by year and month).

IV. RESULTS

A. PROMOTION OUTCOMES BY HISTORICAL BILLETS

Historical billets were first analyzed separately to determine (1) if billets of a specific type related to outcomes, (2) if billets several removed from the promotion eligibility point had an individual relationship to outcomes, and (3) what billet categories to combine for further analyses because of a lack of consistent effect or lack of sufficient numbers of cases in the outcome categories. Preliminary analysis showed data for some billet categories to be very thin. Also, small expected frequencies in some category-by-outcome cells would have invalidated contingency table analysis of relationship between billet categories and outcomes. Consequently, billet categories for command and executive under "shore" were combined into a new category that included the two. The student category was no longer subdivided by subspecialty. Most of the shore and sea functional categories were reduced in number by combining the two subspecialty categories - subspecialty utilized and subspecialty not utilized - into one category, subspecialty. Thus, most of the functional categories were differentiated by the incumbent having or not having a subspecialty, regardless of whether the subspecialty was utilized or not. All three subspecialty categories were only used for "other" billets on shore. Tables 5, 6, 7, and 8 show the promotion outcomes for all officers by the combined billet categories.

TABLE 5

NUMBER OF OFFICERS PROMOTED AND PASSED OVER BY BILLET CATEGORY FOR HISTORICAL BILLET-1*

CATEGORY **	N(%)***	% PROMOTED	% PASSED OVER
SHORE:			
Command/Exec (0,1,2)	35(3.8)	40.0	60.0
Staff (0)	65(7.0)	47.7	52.3
Staff (1,2)	41(4.4)	61.0	39.0
Student (0,2)	24(2.6)	100.0	0.0
Other (0)	183(19.6)	33.9	66.1
Other (1)	151(16.2)	59.6	40.4
Other (2)	86(9.2)	52.6	47.7
SEA:			
Command (0)	19(2.0)	89.5	10.5
Command (1,2)	47(5.0)	100.0	0.0
Executive (0)	84(9.0)	90.5	9.5
Executive (1,2)	131(14.0)	99.2	0.8
Staff (0,1,2)	25(2.7)	80.0	20.0
Other (0)	18(1.9)	83.3	16.7
Other (1,2)	24(2.6)	91.7	8.3
TOTAL	933(100.0)	66.2	33.8

* Chi-Square = 255.41, d.f.= 13, $p<.001$

** Code in parenthesis indicates that the incumbent has no subspecialty (0), has a subspecialty utilized (1), has a subspecialty not utilized (2).

*** Percent of total N is shown in parenthesis.

TABLE 6

NUMBER OF OFFICERS PROMOTED AND PASSED OVER BY BILLET CATEGORY FOR HISTORICAL BILLET-2*

CATEGORY **	N(%)***	% PROMOTED	% PASSED OVER
SHORE:			
Command/Exec (0,1,2)	27(2.9)	37.0	63.0
Staff (0)	64(6.9)	48.4	51.6
Staff (1,2)	22(2.4)	81.8	18.2
Student (0,2)	62(6.7)	96.8	3.2
Other (0)	185(20.0)	32.4	67.6
Other (1)	80(8.7)	71.3	28.8
Other (2)	34(3.7)	73.5	26.5
SEA:			
Command (0)	45(4.9)	73.3	26.7
Command (1,2)	35(3.8)	94.3	5.7
Executive (0)	97(10.5)	70.1	29.9
Executive (1,2)	113(12.2)	97.3	2.7
Staff (0,1,2)	37(4.0)	62.2	37.8
Other (0)	80(8.7)	65.0	35.0
Other (1,2)	43(4.7)	67.4	32.6
TOTAL	924(100.0)	65.9	34.1

* Chi-Square = 206.05, d.f.= 13, $p<.001$

** Code in parenthesis indicates that the incumbent has no subspecialty (0), has a subspecialty utilized (1), has a subspecialty not utilized (2).

*** Percent of Total N is shown in parenthesis.

TABLE 7

NUMBER OF OFFICERS PROMOTED AND PASSED OVER BY BILLET CATEGORY FOR HISTORICAL BILLET-3*

CATEGORY **	N(%)***	% PROMOTED	% PASSED OVER
SHORE:			
Command/Exec (0,1,2)	21(2.3)	42.9	57.1
Staff (0)	70(7.8)	47.1	52.9
Staff (1,2)	12(1.3)	66.7	33.3
Student (0,2)	57(6.4)	94.7	5.3
Other (0)	180(20.1)	48.3	51.7
Other (1)	44(4.9)	77.3	22.7
Other (2)	32(3.6)	84.4	15.6
SEA:			
Command (0)	47(5.3)	70.2	29.8
Command (1,2)	23(2.6)	95.7	4.3
Executive (0)	112(12.5)	53.6	46.4
Executive (1,2)	66(7.4)	90.9	9.1
Staff (0,1,2)	51(5.7)	68.6	31.4
Other (0)	130(14.5)	59.2	40.8
Other (1,2)	50(5.6)	82.0	18.0
TOTAL	895(100.0)	64.8	35.2

* Chi-Square = 110.89, d.f.= 13, $p<.001$

** Code in parenthesis indicates that the incumbent has no subspecialty (0), has a subspecialty utilized (1), has subspecialty not utilized (2).

*** Percent of total N is shown in parenthesis.

TABLE 8

NUMBER OF OFFICERS PROMOTED AND PASSED OVER BY BILLET CATEGORY FOR HISTORICAL BILLET-4*

CATEGORY **	N(%)***	% PROMOTED	% PASSED OVER
SHORE:			
Command/Exec (0,1,2)	11(1.4)	18.2	81.8
Staff (0)	60(7.6)	55.0	45.0
Staff (1,2)	12(1.5)	83.3	16.7
Student (0,2)	36(4.5)	86.1	13.9
Other (0)	195(24.6)	45.1	54.9
Other (1)	22(2.8)	72.7	27.3
Other (2)	13(1.6)	61.5	38.5
SEA:			
Command (0)	49(6.2)	75.5	24.5
Command (1,2)	10(1.3)	100.0	0.0
Executive (0)	58(7.3)	46.6	53.4
Executive (1,2)	23(2.9)	78.3	21.7
Staff (0,1,2)	51(6.4)	51.0	49.0
Other (0)	223(28.1)	67.3	32.7
Other (1,2)	31(3.9)	83.9	16.1
TOTAL	794(100.0)	60.7	39.3

* Chi-Square = 74.48, d.f.= 13, $p<.001$

** Code in parenthesis indicates that the incumbent has no subspecialty (0), has a subspecialty utilized (1), has a subspecialty not utilized (2).

*** Percent of total N is shown in parenthesis.

All historical billets were highly significant when evaluated by chi-square tests of independence. The relationships between billet categories and outcomes were all significant beyond the .001 level of probability. One must conclude that there was a strong relationship between billet categories and promotion to the grade of CDR for a considerable period of time in the billet histories of these individuals.

The preceding analysis could not rigorously determine which of the particular billet categories or how much any one billet category in each of the historical billets contributed to the outcome. Perhaps it was some other variable that had a significant effect. To control for other possible moderating influences, and to determine which factors most significantly affected outcomes, it was necessary to regress the outcome variable with the billet categories by historical billet, with sources, and with year groups. In order to run this regression, dummy variables were created for entry into the regression equations. The Historical Billet-1 dummy variables for the billet categories are shown in Table 9 to illustrate the concept of assigning the categories to the dummy variables. The SEA-XO category with a subspecialty was held out as the control variable. Dummy variables D1 through D13 represented the thirteen billet categories for historical billet-1. Dummy variables D14 through D26 represented the thirteen billet categories for historical billet-2. Dummy variables D27 through D39 represented the thirteen billet categories for historical billet-3. Dummy variables D40 through D44 represented the

TABLE 9

SCHEMATIC ORGANIZATION OF FUNCTIONAL VARIABLES FOR REGRESSION ANALYSIS

		DUMMY VARIABLES												
	FUNCTION	1	2	3	4	5	6	7	8	9	10	11	12	13
	SHORE:													
1	OTHER (0)	1	0	0	0	0	0	0	0	0	0	0	0	0
2	OTHER (1)	0	1	0	0	0	0	0	0	0	0	0	0	0
3	OTHER (2)	0	0	1	0	0	0	0	0	0	0	0	0	0
4	COXO (0,1,2)	0	0	0	1	0	0	0	0	0	0	0	0	0
5	STAFF (0)	0	0	0	0	1	0	0	0	0	0	0	0	0
6	STAFF (1,2)	0	0	0	0	0	1	0	0	0	0	0	0	0
7	STUDENT (0,2)	0	0	0	0	0	0	1	0	0	0	0	0	0
	SEA:													
8	CO (0)	0	0	0	0	0	0	0	1	0	0	0	0	0
9	CO (1,2)	0	0	0	0	0	0	0	0	1	0	0	0	0
10	XO (0)	0	0	0	0	0	0	0	0	0	1	0	0	0
11	STAFF (0,1,2)	0	0	0	0	0	0	0	0	0	0	1	0	0
12	OTHER (0)	0	0	0	0	0	0	0	0	0	0	0	1	0
13	OTHER (1,2)	0	0	0	0	0	0	0	0	0	0	0	0	1
14	XO (1,2)	0	0	0	0	0	0	0	0	0	0	0	0	0

sources and year groups. Table 10 provides a sample of how the values were assigned to dummy variables D40 through D44. Promotion was assigned a value of "1" and non-promotion was assigned a value of "0" for the purpose of this regression.

A stepwise multiple regression was performed, using the SPSS REGRESSION subprogram (Nie, et. al., 1975). The rule applied to entry of each additional variable was that such variable have an F statistic value significant at the .05 level. Also, the Adjusted R-Square value was used as a guide. The entry of variables was stopped when the value of the Adjusted R-Square did not change materially (i.e., by more than .01). Results of this regression are shown in Table 11. These results show a negative relation between promotion success and all shore billet categories (except Student) for Historical Billet-1. The Student billet category and the SEA-XO, No Subspecialty billet category entered the regression equation as the only variables that were positively related to promotion success. The intercept of the equation (constant value of 1.008) represents the complete promotability of some billet categories, and the regression equation emphasizes the variables that have to be used to identify the billet categories with relatively low promotion probabilities (negative regression coefficients for all billet categories except Student and SEA-XO, No Subspecialty).

B. RATE OF PROMOTION BY HISTORICAL BILLETS

Since historical billets were shown to be related to promotion/non-promotion outcomes, perhaps a better insight

TABLE 10

DUMMY VARIABLE VALUES FOR
SOURCE AND YEAR GROUP
FOR REGRESSION ANALYSIS

	DUMMY VARIABLES		
SOURCE	D40	D41	D42
USNA	1	0	0
NROTC(S)	0	1	0
OTHER	0	0	1
OCS	0	0	0

YEAR GROUP	D43	D44
1958	1	0
1959	0	1
1960	0	0

TABLE 11

STEPWISE MULTIPLE REGRESSION OF PROMOTION OUTCOME WITH BILLET CATEGORIES, SOURCES, AND YEAR GROUPS

MULTIPLE R	0.637	
ADJUSTED R SQUARE	0.398	F(12,924) = 52.537, p<.001
STANDARD ERROR	0.367	

VARIABLES IN THE EQUATION

VARIABLE *	B	BETA	STD ERROR B	F
D14	-0.374	-0.315	0.033	132.224
D1	-0.458	-0.385	0.036	157.961
D10	0.137	0.083	0.048	8.151
D18	-0.313	-0.167	0.050	39.832
D17	-0.363	-0.128	0.073	24.704
D2	-0.362	-0.282	0.037	96.587
D3	-0.360	-0.220	0.045	63.024
D5	-0.349	-0.212	0.051	59.901
D4	-0.433	-0.174	0.067	42.224
D6	-0.312	-0.135	0.061	25.888
D27	-0.126	-0.105	0.032	15.553
D33	0.198	0.100	0.051	15.125
(CONSTANT)	1.008			

* Dummy Variable values are as follows:

D14: HIST.BILLET-2 = SHORE-OTHER, NO SUBSPECIALTY

D1 : HIST.BILLET-1 = SHORE-OTHER, NO SUBSPECIALTY

D10: HIST. BILLET-1 = SEA-XO, NO SUBSPECIALTY

D18: HIST. BILLET-2 = SHORE-STAFF, NO SUBSPECIALTY

D17: HIST. BILLET-2 = SHORE-COXO

D2 : HIST. BILLET-1 = SHORE-OTHER, SUBSPECIALTY UTILIZED

D3 : HIST. BILLET-1 = SHORE-OTHER, SUBSPECIALTY NOT UTILIZED

D5 : HIST. BILLET-1 = SHORE-STAFF, NO SUBSPECIALTY

D4 : HIST. BILLET-1 = SHORE-COXO

D6 : HIST. BILLET-1 = SHORE-STAFF, SUBSPECIALTY

D27: HIST. BILLET-3 = SHORE-OTHER, NO SUBSPECIALTY

D33: HIST. BILLET-3 = STUDENT

into the role of billets on promotions could be found by observing the rate of promotion to CDR of those individuals who were promoted. Precedence number was used to define an individual's precedence among those promoted to CDR. Date of rank could not be used for this purpose because too many officers shared the same date of rank. In addition, date of rank is determined by vacancies created as other officers are promoted to captain, retire, etc. Therefore, date of rank is not very dependent on an individual officer's efforts, and is thus an unsatisfactory measure of rate of promotion. Since the precedence number is, by definition, the seniority of individuals in the same rank and year group, it was considered a reasonable measure of the rate of attaining the rank of CDR.

When the billet categories were crosstabulated with promotion outcomes, early, normal, and late, only historical billet-2 showed a significant relationship between billet categories and rate of promotion. It was difficult to make any conclusive statements regarding the results of this analysis.

Using the same stepwise regression approach and the dummy variables, previously described, a multiple regression was run on billet categories with rate of promotion (precedence number), by year group the dependent variable. The results of these regressions are shown in Table 12. The source variables rank consistently high in the order of variables entering these equations. However, it must be kept in mind that the value of the dependent variable decreases as the rate of promotion increases. When regressing rate of promotion with the dummy

TABLE 12

STEPWISE MULTIPLE REGRESSION OF RATE OF PROMOTION WITH BILLET CATEGORIES, SOURCES, AND YEAR GROUPS BY YEAR GROUP

YEAR GROUP 58

MULTIPLE R 0.509

ADJUSTED R SQUARE 0.244 $F(4,197) = 17.188$, $p<.001$

STANDARD ERROR 3083.104

VARIABLE	B	BETA	STD ERROR B	F
D40	4236.848	0.550	537.339	62.171
D41	3111.883	0.290	715.711	18.905
D42	2417.158	0.282	595.689	16.465
D32	-4096.638	-0.140	1812.745	5.107
(CONSTANT)	22262.920			

YEAR GROUP 59

MULTIPLE R 0.707

ADJUSTED R SQUARE 0.476 $F(8,170) = 21.231$, $p<.001$

STANDARD ERROR 3003.897

VARIABLE	B	BETA	STD ERROR B	F
D40	5721.463	0.644	518.504	121.761
D41	4591.874	0.378	700.671	42.949
D30	4485.949	0.160	1545.577	8.424
D32	-6548.562	-0.166	2165.455	9.145
D22	-2571.217	-0.149	966.720	7.074
D7	2341.706	0.117	1119.721	4.374

VARIABLE	B	BETA	STD ERROR B	F
D18	2282.805	0.143	911.066	6.278
D8	-2504.225	-0.117	1217.858	4.228
(CONSTANT)	34927.100			

YEAR GROUP 60

MULTIPLE R 0.481

ADJUSTED R SQUARE 0.218 $F(4,236) = 17.736$, $p<.001$

STANDARD ERROR 2639.989

VARIABLE	B	BETA	STD ERROR B	F
D40	3279.454	0.493	430.566	58.013
D41	2324.685	0.265	546.957	18.064
D42	1025.685	0.144	454.844	5.085
D11	-3247.387	-0.121	1540.763	4.442
(CONSTANT)	47422.160			

DUMMY VARIABLE LABELS

D7: HIST. BILLET-1 = STUDENT
D8: HIST. BILLET-1 = SEA-CO, NO SUBSPECIALTY
D11: HIST. BILLET-1 = SEA-STAFF
D18: HIST. BILLET-2 = SHORE-STAFF, NO SUBSPECIALTY
D22: HIST. BILLET-2 = SEA-CO, SUBSPECIALTY
D30: HIST. BILLET-3 = SHORE-COXO
D32: HIST. BILLET-3 = SHORE-STAFF, SUBSPECIALTY
D40: SOURCE = USNA
D41: SOURCE = NROTC(S)
D42: SOURCE = OTHER

variables, there is a positive relationship between a variable and rate of promotion when the corresponding regression coefficient is negative. Therefore, Table 12 shows that shore duty billets were negatively related to rate of promotion (with the exception of D32), sea billets were positively related to rate of promotion, and the three sources were negatively related to rate of promotion.

C. PROMOTION OUTCOMES AND RATES BY SOURCE

In order to examine the relationship between promotion and source, a contingency analysis was conducted on both promotion/non-promotion and rate of promotion with the four source categories. Results of these analyses are contained in Tables 13 and 14. The results displayed in Table 13 show that "USNA" experienced the highest promotion percentage, while "OTHER" experienced the lowest promotion percentage. This finding coincides with popular conceptions concerning past promotion performance of officers from various sources. However, what seemed unusual were the promotion rate percentages shown in Table 14. For example, only 3.2% of the USNA officers were in the top 20% of their respective year groups (lineally). This phenomenon might suggest that precedence numbers are, at best, an imperfect measure of rate of promotion, but the results were consistent with the regression analyses of precedence numbers in the preceding section.

TABLE 13

CONTINGENCY ANALYSIS OF COMMISSIONING SOURCE AND PROMOTION OUTCOME

OUTCOME	SOURCE: USNA	NROTC(S)	OCS	OTHER	ROW TOTAL
PROMOTED	185 29.7% 72.0%	81 13.0% 71.7%	196 31.5% 67.1%	160 25.7% 58.2%	622 66.4%
NOT PROMOTED	72 22.9% 28.0%	32 10.2% 28.3%	96 30.5% 32.9%	115 36.5% 41.8%	315 33.6%
COLUMN TOTAL	257 27.4%	113 12.1%	292 31.2%	275 29.3%	937 100.0%

Chi-Square(3) = 13.395, $p<.01$

Note: The first number in each cell is the frequency count, the second number in each cell is the percentage of the row, and the third number in each cell is the column percentage.

TABLE 14

CONTINGENCY ANALYSIS OF COMMISSIONING SOURCE
AND RATE OF PROMOTION

OUTCOME	SOURCE				ROW TOTAL
	USNA	NROTC(S)	OCS	OTHER	
EARLY PROMOTION	6 4.1% 3.2%	10 6.8% 12.3%	72 48.6% 36.7%	60 40.5% 37.5%	148 23.8%
NORMAL PROMOTION	107 32.6% 57.8%	52 15.9% 64.2%	107 32.6% 54.6%	62 18.9% 38.8%	328 52.7%
LATE PROMOTION	72 49.3% 38.9%	19 13.0% 23.5%	17 11.6% 8.7%	38 26.0% 23.8%	146 23.5%
COLUMN TOTAL	185 29.7%	81 13.0%	196 31.5%	160 25.7%	622 100.0%

Chi-Square(6) = 109.81, $p<.0001$

Note: The first number in each cell is the frequency count, the second number in each cell is the percentage of the row, and the third number in each cell is the percentage of the column.

D. PROMOTION OUTCOMES BY BILLET PATHS

Preceding analyses have considered historical billets independently with no information regarding the combination of billets that any individuals had over the four historical billets. These combinations of billets (or paths) are crucial from the standpoint of careers. To analyze these paths, the first exploratory step was to calculate distributions over the historical billet-2 categories conditional upon historical billet-1 categories, using the billet categories of the preceding analyses. The result was a 2 x 14 x 14 matrix with 392 cells. Since the sample N was 937, most cell frequencies would be expected to be zero or very small. In order to create meaningful paths between the two historical billets that would permit further branching to historical billet-3, it was necessary to make a severe compression of billet categories. This was done by combining billet categories in the following manner. The command and executive categories at sea were combined into one (as had been previously done for shore CO/XO billets). All other sea billets, whether involving subspecialty codes or not, were combined into one category, since subspecialty-coded billets are rare for surface warfare officers. All shore billets, other than the CO/XO category, were also combined into one miscellaneous category. For the shore, however, the subspecialty distinction was maintained. Students were classified into two subspecialty categories within the shore "other" category. In order to permit ready identification of billet paths using these new categories, the intersections of the dimensions were coded as shown in Table 15.

TABLE 15

CODING OF BILLET CATEGORIES
USED IN BILLET PATH ANALYSIS

BILLET CATEGORY *	CODE
SEA-COXO (1,2)	1
SEA-COXO (0)	2
SEA-OTHER (0,1,2)	3
SHORE-COXO (0,1,2)	4
SHORE-OTHER (1,2)	5
SHORE-OTHER (0)	6

* Code in parenthesis indicates that the incumbent has no subspecialty (0), has a subspecialty utilized (1), has a subspecialty not utilized (2).

The results of this path analysis are contained in Table 16. There appear to be three generalizations that can be made from the path analysis results. First, officers whose last two or three billets were command-at-sea experienced almost perfect promotion success. Second, officers whose last two or three billets were ashore experienced the least promotion success. Finally, officers with a subspecialty experienced greater promotion success than those without a subspecialty.

TABLE 16

NUMBER OF OFFICERS ON BILLET PATHS BY PROMOTION OUTCOME FOR 2-BILLET PATHS

HIST. BILLET-1	PROMOTION OUTCOME *	HIST. BILLET-2 CATEGORIES ** 1	2	3	4	5	6
1	P	35	8	34	2	81	17
	N	0	0	1	0	0	0
2	P	0	15	25	3	0	48
	N	0	2	1	2	0	5
3	P	15	9	14	1	6	11
	N	2	1	1	1	0	5
4	P	1	4	4	2	2	1
	N	1	3	5	3	1	8
5	P	92	8	12	2	50	9
	N	2	10	17	4	35	50
6	P	0	57	15	0	0	26
	N	0	25	31	7	0	92

* P = Promoted; N = Not promoted

** See Table 15 for explanation of billet category codes.

TABLE 17

NUMBER OF OFFICERS ON BILLET PATHS BY PROMOTION OUTCOME FOR 3-BILLET PATHS

HIST. BILLET-1 AND BILLET-2 COMBINATION	PROMOTION OUTCOME*	HIST. BILLET-3 CATEGORIES ** 1	2	3	4	5	6
1-2	P	6	0	11	0	10	7
	N	0	0	0	0	0	0
1-3	P	5	1	11	0	5	9
	N	0	0	0	0	1	0
1-5	P	16	8	23	2	23	6
	N	0	0	0	0	0	0
2-6	P	0	10	14	1	0	17
	N	0	1	1	0	0	3
5-1	P	15	8	22	2	26	18
	N	0	0	0	0	2	0
5-5	P	31	4	6	0	9	0
	N	3	5	13	0	11	3
5-6	P	0	6	0	0	0	3
	N	0	12	13	3	0	22
6-2	P	0	14	17	0	0	22
	N	0	9	5	0	0	11

HIST. BILLET-1 AND BILLET-2 COMBINATIONS	PROMOTION OUTCOME *	HIST. BILLET-3 CATEGORIES ** 1	2	3	4	5	6
6-3	P	0	2	4	0	0	8
	N	0	5	5	0	0	21
6-6	P	0	16	4	0	0	5
	N	0	21	29	5	0	37

* P = Promoted; N = Not promoted

** See Table 15 for explanation of billet category codes.

V. DISCUSSION

The preceding analyses illustrate one possible approach to conceptualizing the impacts on promotion of various factors external to job performance. Although limited in scope and size of sample, this study does establish a clear relationship between promotion and officer billet histories and commission sources. There were some shortcomings in the methodology, but, for the most part, they did not significantly detract from the nature of generalizable results. For example, there appear to be limitations in using precedence numbers to measure rate of promotion. Also, the subspecialty utilization codes may not have reflected the true nature of the match between the requirements of the job and the special qualifications of the officer.

Refinements of the methodology used in this study might include the following: (1) taking into consideration the length of time spent in each billet, to determine the minimum tour length required for a billet to have an effect on promotion, (2) broadening the year group span to include other year groups in the analysis, and (3) changing the values for the billet dimensions, to examine the effects of changing billet groupings. In addition, it appears that similar analyses could be conducted for other officer communities.

The results of this study support, in general, the popular beliefs about what factors drive promotion. For example, command-at-sea is widely considered to be the most important stepping stone for promotion to the higher grade levels. Also, sea

duty is considered to be the only way "to the top," according to most officers' perceptions. The Naval Academy has long been known for the promotion success of its graduates. The importance of a subspecialty perhaps has not received as much emphasis as it should have over the last few years, but it definitely played a role in the promotion of the officers in this study.

It seems apparent, from the organizational viewpoint, that career management is primarily a development process. Thus, it is not the specific assignments in billet paths that account for the promotion history of those on them, but officers who have been earmarked for retention and development into more responsible positions are placed into specific paths. A part of the process that identifies them is student selection boards and screens for executive officers and command and for subspecialist and proven subspecialist designations.

The findings of this study have certain implications for career management from both the organizational standpoint and the individual officer's standpoint. In managing the career paths of its officers, the Navy may have to adjust the way it assigns officers to various billets so that more officers have the opportunity to serve in the billets that have historically been related to high promotional success. Such an adjustment would require shorter tour lengths, but may be more beneficial in the long run because it cycles more officers through these jobs (most of which appear to be right at the heart of the surface warfare mission). The Navy may have to redesign its

reward structure so that those officers who do not get the opportunity to serve in the better billets are properly compensated in some way, since even fully-qualified officers often are forced out by the "up-or-out" policy, and thus do not get the opportunity to realize their career earnings potentials. Assignment officers in Washington must be aware of the effects of certain billet assignments on promotion, so that they can properly counsel the officers they represent. Finally, each officer must be aware of the promotion viabilities of various career paths, so that he can make intelligent choices among the alternatives available to him or her.

VI. CONCLUSIONS

General conclusions that can be drawn from this study are as follows:

- Billet history and commission source were significantly related to promotion to the grade of commander.
- The strongest positive relationships between promotion and billet history were for sea billets, command and executive billets, and billets requiring the use of a subspecialty.
- The strongest positive relationships between promotion and source were for officers accessed through USNA and NROTC(S), although the promotion success for these two sources were almost identical for the sample in this study.
- The individual officer must understand the effects of certain influences on promotion, so that he can adjust the development of his own career to realize his career expectations.

One must be careful in interpreting the results of this study, however, because the job performance of the officers in the sample was not taken as a variable in the analyses. Job performance could very well have been the most significant factor affecting promotion, but it cannot be determined from the results of this study. Also, it must be kept in mind that the Navy generally sends its better officers to the types of billets that were found to be positively related to promotion,

so there may be a question about whether or not the billet contributes to the promotion success of those officers.

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